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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,122	12/07/2000	Ellen Marie Eide	YOR920000648US1	9601

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EXAMINER	
AZAD, ABUL K	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/732,122	EIDE ET AL.	
	Examiner	Art Unit	
	ABUL K. AZAD	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is in response to the communication filed on August 15, 2005.

2. Claims 1-24 are pending in this action.

3. The applicant's arguments with respect to claims 1-24 have been fully considered but they are not deemed to be persuasive. For examiner's response to the applicant's arguments or comments, see the detailed discussion in the Response to the Arguments section.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 4-6, 8-10, 13-16, 22 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Ireton (US 5,797,120).

As per claim 1, Ireton teaches, "a method for synthesizing speech", comprising:

"generating a pitch contour for said synthesized speech" (Fig. 9, element 248); and

"increasing an amount of energy in low frequency components of said pitch contour" (col. 8, lines 23-40).

As per claim 4, Ireton teaches, "where said increasing step further comprises the step of adding band limited noise to said pitch contour" (col. 8, lines 23-40).

As per claim 5, Ireton teaches, "wherein said band limited noise is comprised of one or more sinusoidal components" (col. 9, lines 32-48).

As per claim 6, Ireton teaches, "wherein said band limited noise may be expressed as a sin ($\omega t + \Phi$)" (this is a typical expression for sinusoids wave form, therefor here it is inherent).

As per claim 8, Ireton teaches, "wherein said increasing step serves to add vibrato to said pitch contour" (col. 8, lines 23-40).

As per claim 9, Ireton teaches, "wherein said pitch contour comprises a pitch value associated with each syllable of said speech" (col. 7, lines 13-26).

As per claims 10, 13-16 and 22-23, they are interpreted and thus rejected for the same reasons set forth in the rejection of claims 1, 4-9.

6. Claims 17, 18, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Tohkura et al. (Spectral Smoothing Technique in PARCOR Speech Analysis-Synthesis).

As per claim 17, Thokura teaches, "a method for synthesizing speech", comprising:

"generating a pitch contour for said synthesized speech" (section Parameter estimation error influences on synthetic speech quality); and

"filtering said pitch contour with an impulse response filter having a pole at a desired low frequency value" (section Bandwidth expansion method).

As per claim 18, Thokura teaches, "wherein low frequency value is blew approximately 10 Hz" (section Bandwidth expansion method, bandwidths are expanded by 30-10 Hz)

As per claim 20, Thokura teaches, "wherein said increasing step serves to add vibrato to said pitch contour" (section Bandwidth expansion method).

As per claim 21, Thakura teaches, "wherein said pitch contour comprises a pitch value associated with each syllable of said speech" (section Parameter estimation error influences on synthetic speech quality).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ireton (US 5,797,120) as applied to claims1 and 10 above.

As per claims 2 and 11, Ireton does not explicitly teach, "wherein said low frequency components are below approximately 10 Hz". However, Ireton teaches at col. 8, lines 35-40, "the band-variable noise generator can be selectively generate a noise signal having various desired frequency spectra or frequency characteristic. The band-

variable noise generator of the present invention can selectively add noise to various parts of the signal spectra, thus providing a distinct naturalness to the speech signal". Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to the low frequency component is about 10Hz, the choice of the low frequency component is routine experimentation and optimization in the absence of criticality.

9. Claims 3, 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ireton and Tohkura as applied to claims 1, 10 and 17 above, and further in view of Pearson (US 5,400,434).

As per claim 3, 12 and 19, Ireton and Tohkura do not explicitly teach, "interpolating discrete pitch values to generate said pitch contour". However, Pearson teaches, "interpolating discrete pitch values to generate said pitch contour" (col. 6, lines 55-68, particularly read on "to produce varying pitch, interpolation is performed within the table"). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to interpolate discrete pitch values to generate pitch contour because Pearson teaches his invention produce a naturalness speech at the output (col. 7, lines 7-48).

10. Claims 7 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ireton (US 5,797,120) as applied to claims 122 above, and further in view of Tohkura et al..

As per claims 7 and 24, Ireton does not explicitly teach, "wherein said increasing step further comprises the step of filtering said pitch contour with an impulse response filter having a pole at a desired low frequency value". However, Tohkura teaches, "wherein said increasing step further comprises the step of filtering said pitch contour with an impulse response filter having a pole at a desired low frequency value" (Section: Bandwidth expansion method). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an impulse response filter having a pole so as to produce natural speech output.

Response to Arguments

11. The applicant asserts, "Ireton teaches that "the gain controls 308a through 308n enable the power or energy in each of the frequency sub-bands to be individually controlled and enable a wide range of band- variable noise sequences. The band-variable noise generator 300 of the present invention can selectively add noise to various parts of the signal spectrum, thus providing a distinct naturalness to various parts of the signal spectrum, thus providing a distinct naturalness to the speech signal." (Col. 8, lines 25-40; emphasis added.) Ireton does not, however, disclose or suggest increasing an amount of energy in low frequency components of said pitch contour and does not disclose or suggest adding band limited noise to said pitch contour".

The examiner disagrees with the applicant's above assertion because Figures 4 and 5's teaching are implemented in the Irecton's current invention (see, col. 7, lines 13-26), at Figures 4 and 5 the element impulse train generator is pitch contour generator.

The applicant has acknowledged that Ireton teaches the band-variable noise generator of the present invention can selectively add noise to the various part of the signal spectrum. From this statement band-variable noise (energy) is added (increase) selectively to the various part (inherently low frequency because here low frequency is relative term) of the signal spectrum (pitch contour). Again Ireton teaches, a band limited noise is produced to add with the produced pitch contour (Abstract).

12. The applicant further argues, "Applicants could find no disclosure or suggestion by Tokhura to filter the pitch contour with an impulse response filter having a pole at a desired low frequency value".

The examiner notes that the pitch contour is reads on speech frequency spectrum as shown at Figure 1. In the section Bandwidth expansion method shows smoothing the speech spectrum (pitch contour) by an all-pole model of speech synthesis filter (impulse response filter). Descriptions of Impulse response filter please see any textbook on signal processing, impulse response section and filters section.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Abul K. Azad** whose telephone number is **(571) 272-7599.** If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richemond Dorvil**, can be reached at **(571) 272-7602.**

Any response to this action should be mailed to:

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Or faxed to: **(571) 273-8300.**

Hand-delivered responses should be brought to **401 Dulany Street, Alexandria, VA-22314** (Customer Service Window).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

November 16, 2005

Abul K. Azad
Primary Examiner
Art Unit 2654